

# Emergency egress

By Barb Compton

*The scene was familiar to workers in the Launch Control Center watching remote camera footage of the evening's pre-launch activities. The astronauts had completed their 195-foot ascent up the Fixed Service Structure at Pad 39B and were entering the White Room where closeout crew members were waiting to assist them into the orbiter. That's where any semblance of routine ended. The video images that followed were illuminated by the haze of water being sprayed from the pad's Firex system. Masked figures staggered out of the White Room and toward the slidewire baskets poised at the opposite end of the FSS. Closeout crew members assisted the astronauts with Emergency Life Support Apparatus (ELSA), and helped carry them to the baskets. Moments after the baskets were filled the water stopped. The astronauts and closeout crew climbed out and congratulated each other on their acting ability. And the NASA test directors in the LCC began preparing for the next phase of the Emergency egress exercise.*

## Simulation keeps team on top of procedures



"ASTRONAUT" MARK ADAMS, an employee of the Vehicle Integration Test Team Office, moves toward the wire baskets on Launch Pad 39-B shortly after the "emergency" is announced.

John Stealey spent several months firming up the details for the April 4 simulation. As the NASA test director managing the activity, he was responsible for coordinating the efforts of dozens of participants and ensuring the success of the exercise.

He also developed the emergency scenario that would send the pseudo-astronauts and the real-life closeout crew scrambling for their lives. Stealey said he was perusing an emergency procedures book searching for ideas when he was struck by the potential calamity that could be caused by an inadvertent Ground Umbilical Carrier Plate (GUCP) disconnect. The bolts securing the GUCP line are usually released by pyrotechnics at the T-0 mark in the count. The situation Stealey developed involved a leaking line which would blow up after being blown free from the orbiter. Shrapnel would strike the white room, threatening the astronauts and closeout crew. The egress sprinklers would spit into action and, to further complicate matters, it would be getting dark. Would the procedures, written in manuals but rarely tested hands-on, work in such trying conditions?

"The answer was, they were pretty close," Stealey said. Although there were some problems with communications between the LCC and the fire-rescue crew on its way to the pad, all participants were successfully placed in the wire baskets and, once the simulation started up again near the bunker area below, safely transported from the bunker, via M113 Armored Personnel Carriers to the outside pad perimeter. There, six helicopters -- three from the Department of Defense, two from NASA and one from a private medical transport company, First Flight -- transported the injured to three area hospitals.

More than a dozen organizations participated in the simulation, including Johnson Space Center, which supplied two astronaut suits that participants were warned not to rip in their zeal for authenticity. The simulation was unique in that the crash-out gate from the pad was utilized for the first time in a simulation, and re-enactment was carried through to the hospitals.

Stealey said simulations would continue to be held about once a year; however, they will be on a smaller scale.



Closeout crew members wearing Emergency Life Support Apparatus (ELSA) carry an "injured" astronaut to a wire basket. Note the Chem-lite tube attached to the sleeve of Closeout Crew member No. 3. The chemical inside the tube aids in locating crew members under adverse conditions.



The wire baskets were restaged in the bunker area below the lighted pad, seen in the background.



M-113 tank No. 2 makes its way over the crashout gate to the north of Launch Pad 39-B. From there the astronauts were transferred to helicopters and transported to area hospitals.

# Hurricane Zelda puts emergency planners to the test

by George Diller

Zelda may have been a simulated hurricane but it generated some real training for the emergency preparedness team at Kennedy Space Center.

KSC recently joined 12 military installations and 65 counties in the statewide preparedness exercise, sponsored by the Florida Department of Emergency Preparedness.

The KSC Hurricane Center was activated and the management team for the ride-out crew was called in to participate so that response and recovery procedures in the KSC Hurricane Plan could be tested.



Zelda proved to be a Category III hurricane as it crossed the state from the Gulf of Mexico, exiting into the Atlantic Ocean over Merritt Island and Cape Canaveral.

Special KSC-specific threats, ranging from alligators, rodents and snakes to facility flooding, road debris, malfunctioning radio and telephone systems, and fouled sewage and water treatment facilities, were added to the exercise by BOC Emergency

Preparedness Coordinator John Karas.

Wayne Kee, NASA emergency preparedness planning officer, and EG&G's Roger Scheidt, KSC hurricane coordinator, joined managers from around the center in the exercise.

The before-the-fact thinking gave the hurricane response team the advantage of pre-planning during a period of tranquil weather instead of having to react unrehearsed during a storm emergency.

"It's important that everyone think now about what supplies they'll need for their area and request them right away," said

Scheidt. "It's impossible to deliver 2,000 sand bags, for example, after a hurricane condition has been declared."

Each division at KSC is encouraged to review its own hurricane plan, which may also be part of the KSC Comprehensive Emergency Preparedness Plan (KHB 1040.1F).

Emergency preparedness personnel will be in the lobby of the KSC Headquarters building on May 31 between 11 a.m. and 1 p.m. with displays, surge maps, hurricane readiness check sheets and other handouts that will also be useful in being prepared for a hurricane at home.

## DC-XA completes first of five planned flight tests at White Sands

The Delta Clipper-Experimental Advanced (DC-XA), a single stage rocket developed by NASA and McDonnell Douglas Aerospace, recently completed the first of five flight tests at the U.S. Army White Sands Missile Range, New Mexico.

The vertical takeoff/vertical landing experimental vehicle reached an altitude of 800 feet, moving 350 feet laterally up range, during the May 18 test. After briefly hovering over the landing pad, the rocket throttled its four main engines to descend and brake for a landing. Landing gear was extended as the cone-shaped rocket neared the ground. The flight duration was one minute.

On landing, fire flared along the base and side of the aeroshell of the technology demonstration vehicle and was extinguished. Initial inspections showed that the vehicle is in good shape, structurally sound, with only superficial damage.

"We successfully completed our flight objectives," said Dan Dumbacher, NASA's DC-XA program manager at the Marshall Space Flight Center, Huntsville, AL. Marshall is the host center for NASA's Reusable Launch Vehicle Technology

Program. "Damage was confined to one of the flaps of the DC-XA. The vehicle will fly again soon."

The second test is currently scheduled for June 7.

"Flight testing the DC-XA will provide information about the performance of composite materials and other advanced technologies in the launch vehicle as it encounters the conditions of flight, such as temperature, pressure and noise. This information will be very valuable for the X-33 technology demonstrator NASA and an industry partner will develop in the future," Dumbacher said. The U.S. Air Force's Phillips Laboratory at Kirtland Air Force Base, New Mexico, will manage flight test operations.

The DC-XA evolved from the DC-X, which the U.S. Air Force flew eight times between August 1993 and July 1995.

The 43-foot-high airframe was extensively modified by replacing existing systems with a composite hydrogen tank; a Russian-built aluminum-lithium alloy liquid oxygen tank; a composite intertank to connect the hydrogen and oxygen tanks; and an auxiliary propulsion

system which includes a composite liquid hydrogen feedline, a composite liquid hydrogen valve, a liquid-to-gas conversion system reaction control system, and a Russian auxiliary power unit providing redundant hydraulic power for flight control.

"When DC-XA lifts off from its launch stand, it will be the first time a rocket has flown with a composite hydrogen tank. This innovation and the many other technology enhancements included in the vehicle will make its flight testing very challenging," said Dumbacher.

Ground testing of the DC-XA exercised all of the vehicle subsystems and showed the vehicle is ready for flight, Dumbacher said. It included three firings of DC-XA's main propulsion system, between three and 20 seconds in duration, at up to 95 percent thrust level.

McDonnell Douglas is supported in the preparation of DC-XA for flight by Aerojet, prime developer of the auxiliary propulsion system; Lockheed Martin Corporation, developer of the ground propellant system, and by Rockwell International, which provided an acoustic structural health monitoring

system for the hydrogen tank. The DC-XA, X-34 and X-33, and related long term technology development efforts, comprise NASA's Reusable Launch Vehicle Technology Program, a partnership among NASA, the Air Force and private industry to develop a new generation of single-stage-to-orbit launch vehicles. The X-34, a small technology demonstrator, will undergo test flight in 1998 while the X-33 large technology demonstrator is planned for test flight in 1999. Success of the X-33 could lead to a national, industry-led decision to develop a commercial reusable launch vehicle early next century. Such a vehicle could dramatically reduce the cost of launching payloads into space.

### Correction

A listing of winners of NASA's Exceptional Achievement Medal, published in the May 10 edition of *Spaceport News*, inadvertently left out the name of Brenda Webb. Webb was cited for outstanding professionalism, unfailing dedication and significant contributions to the success of the Vehicle Engineering Directorate and the Shuttle program.



HUGH HARRIS, director of Public Affairs, is presented with a proclamation for his humanitarian efforts by Insurance Commissioner Bill Nelson.

## 35th. . .

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successful record of human space exploration when he was launched aboard a Mercury Redstone on the suborbital Freedom 7 mission on May 5, 1961.

Carpenter was launched on the second orbital manned flight, Aurora 7 on a Mercury Atlas May 24, 1962. Cooper piloted the fourth orbital manned flight, the Faith 7 mission aboard a Mercury Atlas, which was launched May 15, 1963. He also served as commander for Gemini 5 which launched Aug. 21, 1965.

The astronauts and other well-known space supporters, including Florida Insurance Commissioner and former Congressman Bill Nelson, shared the spotlight with members of the media who spent the majority of their careers informing the public about America's achievements in human space flight.

A "roll of honor" of communicators, no longer active, who spent significant portions of their careers telling the world of humanity's leap into space, was read. The names will be part of a plaque for permanent display at the KSC news center.

Hugh Harris, director of Public Affairs, was honored with a proclamation read by Nelson which cited his years of dedi-

cated service in supplying information about the nation's space program to the public, including the commentary for more than 100 Space Shuttle and other launches.

Harris was also cited for his humanitarian efforts which resulted in the opening of one of the first free medical clinics in the country.

In addition to the proclamation signed by Florida Governor Lawton Chiles,

Harris was presented with a photo montage representing the space programs he has worked with and a flag that was flown on Apollo 17.

NASA Administrator Dan Goldin, who was unable to attend the event, said in a letter commemorating the occasion: "This celebration . . . reminds us of how far we have come since that historical suborbital flight of 15 minutes and 22 seconds, as we recognize Dr. Shannon Lucid's 53rd day in space of a 140-plus-day mission aboard the Mir in low Earth orbit.

As explorers, pioneers and innovators, we look to the future with great expectation, awaiting the first element launch of the International Space Station in November 1997 and wonder what discoveries will be honored 35 years from now at the 70th anniversary of Americans in space." Proceeds from the banquet benefit the Astronaut Scholarship Fund.

## Taking daughters to work



MORE THAN 1,500 daughters of Kennedy Space Center employees got an inside look at how their parents make the center run during Take Our Daughters to Work Day April 18. The purpose of the event was to give the girls a realistic view of day-to-day work, said Barbara Powell, the event's organizer. In the photo above, Diane Alvarado, a Bionetics employee, shows her daughter Meghan, 11, an Audubon Elementary School fourth grader, the process of placing photo captions on prints in the Bionetics photo lab. Below, one of the event's featured speakers, Vicki VanMeter, poses in front of the Explorer orbiter at the KSC Visitor Center. In 1993 Vicki became the youngest person to pilot a single engine airplane from east to west across the United States. A year later she became the youngest person to perform a solo transatlantic flight. Vicki and Libby Massey, who worked in KSC's Equal Opportunity and Public Affairs Offices before transferring to NASA Headquarters and ultimately retiring, spoke to the girls about setting and achieving their goals.



John F. Kennedy Space Center

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